

with oxygen and incorporating an oxygen-free material directly into the surface to passivate the surface of the first conductive layer to reduce the ability of the first conductive layer to associate with oxygen. The oxygen-free material is selected from a group consisting of phosphine and methylsilane. A second conductive layer is deposited on the surface after incorporating the oxygen-free material into the surface and the second conductive layer is exposed to a thermal process. The step of depositing a first conductive layer includes depositing a capacitor plate and the method further includes depositing an insulator over the second conductive layer, with the step of exposing the second conductive layer to a thermal process including flowing the insulator.

Neither the Kamiyama nor Lee references, whether taken individually or in combination, nor any of the other references of record, discloses or suggests incorporating an oxygen-free material directly into the surface to passivate the surface of the first conductive layer to reduce the ability of the first conductive layer to associate with oxygen, where the oxygen-free material is selected from a group consisting of phosphine and methylsilane. The combination of elements recited in amended claim 37 is thus allowable.

The Examiner should note that the amendments to claim 37 narrow the scope of this claim by specifying a group of materials for the oxygen-free material. Thus, no additional search is required by the Examiner due to these amendments, and the amendments place claim 37 in condition for allowance. The same is true of independent claims 82, 86, and 95, each of which has been amended to recite an atmosphere including or exposure to the group consisting of phosphine and methylsilane. Such amendments narrow the scope of these claims, and do not necessitate a new search by the Examiner, placing claims 82, 86, and 95 in condition for allowance. The combinations of elements recited in each of these independent claims is allowable.

The claims dependent on the independent claims are allowable for the same reasons as the independent claims, and because of the additional limitations added by the dependent claims. With regard to the independent claims, although the amendments narrow the scopes of claims 37, 82, 86, and 95, this does not mean that all equivalents to the recited materials in the amended groups are precluded from the scope of the amended claims under the doctrine of equivalents.

All pending claims are in condition for allowance, and favorable consideration and a Notice of Allowance are respectfully requested. The Examiner is requested to contact the undersigned at the number listed below for a telephone interview if, upon consideration of this amendment, the Examiner determines any pending claims are not in condition for allowance. The undersigned also requests the Examiner to direct all future correspondence to the address set forth below in the event the Examiner shows a different correspondence address for the attorney of record.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made".

Respectfully submitted,
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Enclosures:

Postcard
Check
Fee Transmittal Sheet (+ copy)
Supplemental Information Disclosure Statement (+ copy)
Form PTO-1449
Cited References (3)

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 37, 82, 86, and 95 have been amended as follows:

37. (Twice Amended) A method of forming a semiconductor device, comprising:

depositing a first conductive layer having a surface and having an ability to associate with oxygen;

incorporating an oxygen-free material directly into said surface to passivate the surface of said first conductive layer to reduce the ability of the first conductive layer to associate with oxygen, the oxygen-free material being selected from a group consisting of phosphine and methylsilane;

depositing a second conductive layer on said surface after incorporating the oxygen-free material into the surface;

exposing said second conductive layer to a thermal process;

and wherein said step of depositing a first conductive layer comprises depositing a capacitor plate;

and wherein said method further comprises depositing an insulator over said second conductive layer; and

said step of exposing said second conductive layer to a thermal process comprises flowing said insulator.

82. (Twice Amended) A method of forming a semiconductor device, comprising

providing a first conductive layer having a surface and having an ability to associate with oxygen;

placing the surface of the first conductive layer in direct contact with an oxygen-free atmosphere under appropriate conditions to passivate the surface and reduce the ability of the first conductive layer to associate with oxygen, the oxygen-free atmosphere including a material selected from a group consisting of phosphine and methylsilane;

providing a second conductive layer on the surface of the first conductive layer;

subjecting the second conductive layer to a thermal process; and wherein depositing a first conductive layer forms a capacitor plate and wherein the process further comprises depositing an insulator over the second conductive layer and wherein exposing the second conductive layer to a thermal process comprises flowing the insulator.

86. (Amended) A method of forming a semiconductor device, comprising:
depositing a first conductive layer having a surface and having an ability to associate with oxygen;

incorporating a selection consisting of [diborane,] phosphine[, and methylsilane[, hexamethyldisilane, hexamethyldisilazane, HCL, boron trichloride,] and combinations thereof directly into the surface to passivate the surface of the first conductive layer to reduce the ability of the first conductive layer to associate with oxygen;

depositing a second conductive layer on the surface after incorporating the oxygen-free material into the surface; and

exposing the second conductive layer to a thermal process.

95. (Amended) A method of forming a semiconductor device, comprising
providing a first conductive layer having a surface and having an ability to associate with oxygen;

placing the surface of the first conductive layer in direct contact with a selection consisting of [diborane,] phosphine[, and methylsilane[, hexamethyldisilane, hexamethyldisilazane, HCL, boron trichloride], and combinations thereof under appropriate conditions to passivate the surface and reduce the ability of the first conductive layer to associate with oxygen;

providing a second conductive layer on the surface of the first conductive layer; and

subjecting the second conductive layer to a thermal process.